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Chemical Chips Using Polydiacetylene Vesicle Arrays on Glass

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Polydiacetylene-based vesicles are interesting materials in view of application to chemical and biological sensors. These vesicles are unique in changing color from blue to red upon specific binding events, caused by shortening of delocalization length of π–electrons along diacetylene backbones. Various binding events including viruses, toxins, glucose, and ionic interactions have been reported detectable.

However, simultaneous screening of various binding events has not been possible with solution-phase vesicles. Recently, we were successful in immobilization of the polydiacetylene vesicles on glass substrates without losing their unique color changing property (Advanced Materials **2003**, 15, 1118).

In this presentation, we report on printing of polydiacetylene vesicles on glass substrates by using a conventional spotter to make micrometer-scale dot array patterns. Each dot is found to possess the color-changing property as well as the fluorescence self-emission. This technique allows us, for the first time, to fabricate biochips based on polydiacetylene vesicles and to screen binding events simultaneously.